Challenge TB – South Sudan

Year 2

Annual Report

October 1, 2015 – September 30, 2016

November 7, 2016

Cover photo:

A motorcycle (boda boda) rider delivers sample containers collected from TB medical units (TBMUs) to the National Reference Laboratory. Photo Credit to Anthony Worri (CTB Senior Lab Technical staff).

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List of Abbreviations and Acronyms

AAA	Arkangelo Ali Association
AIDS	Acquired Immunodeficiency Syndrome
ART	Aids Resistance Trust
ART	Antiretroviral Therapy
CB-DOTS	Community based DOTS
CBO	Community Based Organization
CCM	Country Coordination Mechanism
CES	Central Equatoria State
CHD	County Health Department
CI	Contact investigation
CPT	Cotrimoxazole Preventive Therapy
CRS	Community Referral System
CTRL	Central TB Reference Laboratory
DHIS	District Health Information System
DOTS	Directly Observed Treatment Short Course
DQA	Data Quality Assessment
DR-TB	Drug Resistant TB
DST	Drug Susceptibility Test
EES	Eastern Equatoria State
EPI	Epidemiological analysis
EQA	External Quality Assessment
ERR	Electronic recording and reporting
eTBr	Electronic TB register
GDF	Global Drug Facility
GF	Global Fund
HCW	Health care workers
HIV	Human Immunodeficiency Virus
HSS	Health Systems Strengthening
IC	Infection Control

IDP	Internally Displaced Persons
IMC	International Medical Corps
IP	Infection prevention
IPT	Isoniazid Preventive Therapy
JTH	Juba Teaching Hospital
KNCV	KNCV Tuberculosis Foundation
LFA	Local Fund Agent
M&E	Monitoring and Evaluation
MDR-TB	Multi Drug Resistant Tuberculosis
MOH	Ministry of Health
MRDA	Mundri Relief and Development Association
MSH	Management Sciences for Health
NFM	New Funding Model
NGO	Non-governmental organization
NSP	National strategic plan
NTP	National TB Program
OR	Operational research
PHCC	Primary Health Care Center
PMDT	Programmatic Management of Drug Resistant TB
PR	Prime recipient
SOP	Standard operating procedures
TB	Tuberculosis
TBMU	TB Management Unit
TFM	Transition Funding Mechanism
TOT	Training of trainers
TWG	Technical working group
UNDP	United Nations Development Program
USAID	United States Agency for International Development
USD	United States Dollar
WES	Western Equatoria State

WHO	World Health Organization

Executive Summary

Challenge TB (CTB) South Sudan is led by MSH with KNCV as the sole collaborating partner. In Year 2, CTB strategically focused on increasing case notification and improving treatment outcomes by supporting the expansion of quality and sustainable TB care services in the three states of Central (CES), Eastern (EES) and Western Equatoria (WES) (states with large populations and a high burden of TB and HIV). In addition, CTB supported the provision of TB services to internally displaced populations (IDPs), to the United Nation Missions camps, commonly known as Protection of Civilian Sites (PoCs) and supported the expansion of quality-assured TB diagnostic services beyond the three states. Four community based organizations (CBOs) were subcontracted to implement TB community activities in the four counties of Juba, Yei, Lainya and the Greater Mundri. In July 2016, the country experienced conflict which began in Juba and spread to areas supported by CTB. The conflict resulted in a massive displacement of the population and the disruption of many services including health care. Joint supportive supervision, access to data and access to the PoCs and IDP camps were especially affected by the conflict. Despite the conflict, CTB worked closely with the partners International Medical Corps (IMC) in Juba PoC and Health Link South Sudan in Mingkaman IDP camp to implement TB activities in these two settings.

Improved contact investigation: During year 2, CTB continued supporting contact investigation in seven health facilities in five counties in South Sudan. A total of 1,654 index TB cases were registered out of which 20.1%(333/1,654) households were visited and contacts were screened using standard tools and forms. About 17% (476/2,824) of contacts screened were referred for TB microscopy, out of which 8% (37/476) were bacteriologically confirmed with TB through smear microscopy (no clinically diagnosed or extrapulmonary cases diagnosed).

Provision of services to displaced populations: CTB supported the development of the framework, "Tuberculosis Prevention, Care and Control among Refugees and Internally Displaced Populations in South Sudan" to ensure access to TB prevention, care and control services at IDP camps in South Sudan. In collaboration with the NTP and partners, CTB trained 58 HCWs (21 female and 37 male) on TB diagnosis and case management at the POCs and IDP camp, procured and delivered lab equipment, supported the preparation of lab reagents and the distribution of LED microscopes as well as the quantification of TB drugs. From October 2015 to July 2016, 449 TB cases were diagnosed and enrolled in treatment within the intervention area; however, the treatment success rate could not be assessed due to accessibility constraints resulting from the July 2016 conflict.

Increase utilization of GeneXpert Testing: CTB has supported the use of new technologies with 2 GeneXpert machines at the Central Reference Laboratory (CTRL) since November 2014. At the beginning, the utilization was low due to challenges with transporting samples from the peripheral laboratories to the CTRL. Through CTB, a network was established and samples were transported from the TB Management Units (TBMUs) laboratories to the CTRL for testing. Using motorcycles (boda boda) for transportation has resulted in an increase in GeneXpert tests from 403 in September 2015 to 513 in January 2016. From January to June 2016, the country experienced a cartridge stock-out. Cartridges were later delivered by the GF/United Nations Development Program (UNDP). Out of 513 samples tested, 32% (164/513) were mycobacterium TB positive with 60% (99/164) proportion of newly confirmed among all cases. Seven percent of the cases were detected (11/164 were Rifampicin Resistant (RR)).

1. Introduction

TB is a significant public health problem in South Sudan. According to 2015 WHO estimates, the TB prevalence rate was 319 cases per 100,000 population, the TB incidence rate was 146 cases per 100,000 population and 3,400 people died of TB resulting with a mortality rate of 28 deaths from TB per 100,000 population. The incidence rate of MDR/RR-TB was estimated at 6.2 per 100,000 population. Additionally, TB notification in 2015 was 10,250 of which 81% were pulmonary TB cases.

Challenge TB (CTB) is a five-year program funded by the United States Agency for International Development (USAID) and is implemented by lead partner KNCV Tuberculosis Foundation (KNCV), and other consortium partners. Management Sciences for Health (MSH) is the lead implementing partner in South Sudan. The total buy-in for year two was USD $2,452,800.

CTB focuses on improving patient-centered quality TB services, developing country specific evidence based strategies to achieve high impact results, build local capacity and the utilization of innovations and new technologies to move forward in the global fight against TB. During year two, the South Sudan CTB project has focused on six sub-objectives: enabling environment; comprehensive high quality diagnostic network; patient-centered care and treatment; political commitment and leadership; quality data; surveillance and Monitoring & Evaluation (M&E) as well as human resource development.

CTB's key approaches & technical strategies to achieve its objectives were achieved through the implementation of the following activities:

- CTB finalized the revision of the National Strategic Plan (NSP), annual plan, guidelines, manuals and standard operating procedures (SOP)
- Integrated TB laboratory services into the functional primary health care centers (PHCCs)
- Involved a county focal person in slide randomization collection for external quality assessment (EQA)
- Trained peripheral lab staff and a county focal person on EQA and sampling of slides
- Supported the revision and updating of the existing TB laboratory manuals through a lab technical working group
- Supported sample referral from peripheral facilities to CTRL and GeneXpert sites
- Supported the implementation of contact investigation among index cases in four counties in Central Equatoria State
- Supported the integration of TB services into general health care facilities in 3 states
- Provided TB services in IDP camps and POCs through onsite training
- Mentored technical implementing partners on the basics of TB care
- Provision of TB services through the implementation of proper referral linkage from the community to primary health care centers using community based organizations and community structures in the three states
- Supported the development of facility-based tuberculosis infection control (TBIC) plans in Juba city
- Initiated TB screening among child contacts and IPT for children without TB in the three states and supported the engagement of the private sector in TB control in the three states, starting with Juba City.

Central, Eastern and Western Equatoria states have a very significant burden of TB and HIV. Their geographical location and populations can be viewed in Map 1, below. During year 2, CTB supported the provision of TB services to the displaced populations (PoC and IDPs camps) and will support the expansion of quality-assured TB diagnostic services in all the states and the community TB services in five Counties (See Figure 1).

Figure 1: Map of South Sudan highlighting 3 CTB supported states, Central, Eastern and Western

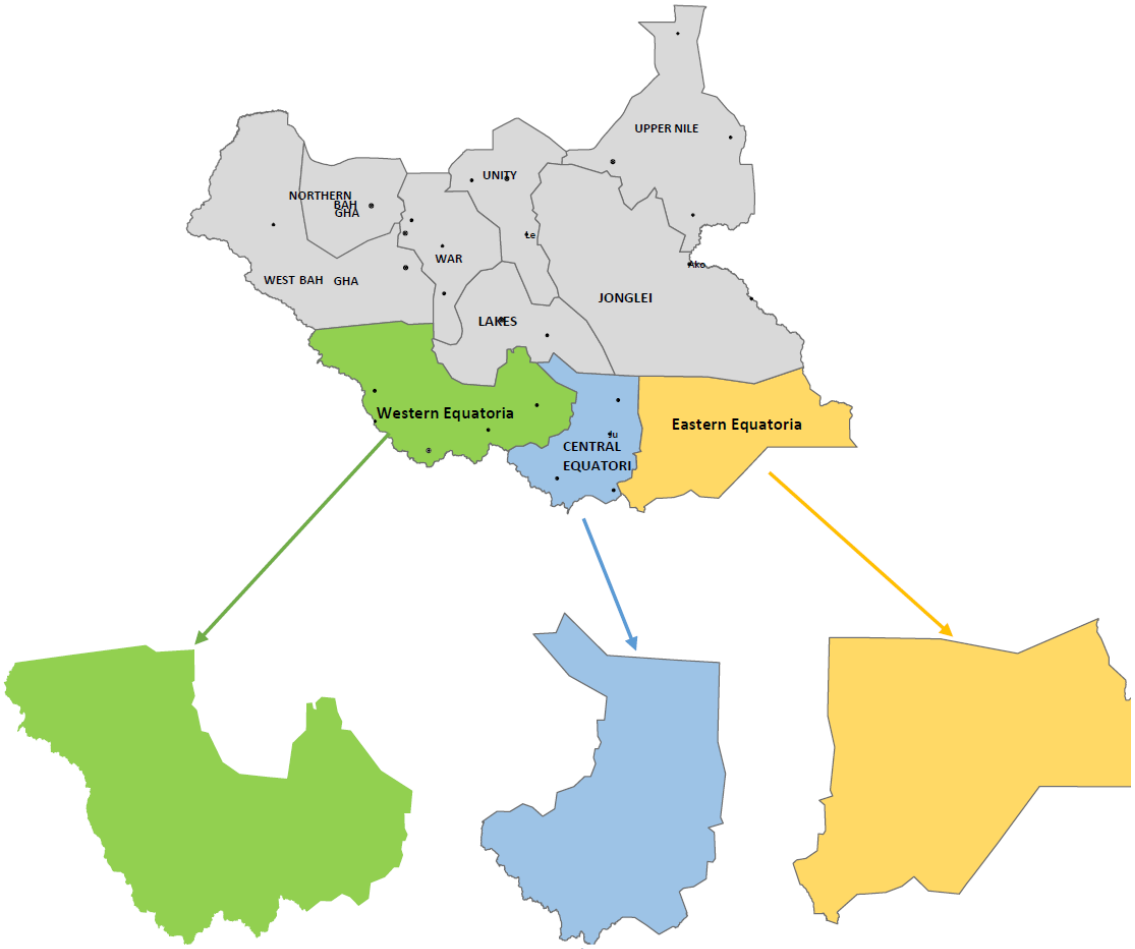


Figure 2: Western Equatoria State *Figure 3: Central Equatoria State* *Figure 4: Eastern Equatoria State*

[1]**Population:** 665,559					
Category of health facility					
Hospitals		PHCCs		PHCU	
[2]All	[3]TB	All	TB	All	TB
7	5	30	12	177	0

Population: 930,233					
Hospitals		PHCCs		PHCU	
All	TB	All	TB	All	TB
7	3	60	14	186	7

Population: 380,344					
Hospitals		PHCCs		PHCU	
All	TB	All	TB	All	TB
8	5	38	6	177	0

[1] Population estimated projected from 2008 census with annual population growth of 3%.
[2] All – Total health facilities in the state by category
[3] TB – Health facilities with TB services

2. Country Achievements by Objective/Sub-Objective

Sub-objective 1. Enabling environment

This sub-objective is focused on strengthening the policy environment for an effective national TB response at all levels of the health system through the provision of TB treatment for all forms of TB according to national guidelines and the scale-up of community TB care was the focus of this sub-objective. The framework for TB prevention, care and control for refugees and IDPs (developed through TB CARE I) and was meant for use by partners in these settings. A community TB health worker's manual and job-aids were developed during year 1 of the project to guide implementing partners and the community health workers on implementing TB activities at the community level. The materials have been reviewed by the Ministry of Health (MOH) Behavioral Change Communication (BCC) technical working group (TWG) and the design of the artwork was finalized. The framework, the manual and job aids are still awaiting endorsement by the MOH (See Table 1).

While waiting for MOH endorsement, CTB received a "go ahead" from the NTP to print the materials without the preface (the preface requires endorsement by the MOH).

A total of 500 copies of TB training manuals and flipcharts were printed and distributed to 95 home health providers (HHPs), trained by the four CTB supported CBOs and the leadership of TBMUs. The manual is being used as a reference and the flipchart is being used during individual trainings and group health education sessions.

Table 1: Sub objective 1. Enabling environment

No.	Outcome Indicators	Indicator Definition	Baseline (Year/ timeframe)	Target Y2	Result Y2
1.1.1	% of notified TB cases, all forms, contributed by non-NTP providers (i.e. private/non-governmental facilities)	**Description**: Proportion of TB cases (all forms) reported by non-NTP providers (i.e. private/ non-governmental facilities) **Indicator Value**: Percent Level: National and Challenge TB geographic areas **Numerator**: Number of all TB cases (bacteriologically confirmed + clinically diagnosed; includes new & relapse cases) reported by non-NTP providers in the past year. **Denominator:** Total number of TB cases (bacteriologically confirmed + clinically diagnosed; includes new & relapse cases) reported by both NTP and non-NTP providers in the past year	41% (859/2,120) (2014) Coverage of 6 states (EES, WES, LS, WS, WBeG, NBeGS)	2% increase based on the baseline	47% (4,844/10,377) Coverage of 7 states (CES, EES, WES, LS, WS, WBeG, NBeGS) CTB area = 6% (576/10,377

Key Results

TB services are accessible to internally displaced persons: In year two, CTB continued to engage with the NTP to obtain their endorsement of the framework for TB prevention, care and control in refugees and IDPs in South Sudan and the HHP Manual. The framework and the manual are currently with the Undersecretary MoH for endorsement. In collaboration with the NTP and implementing partners, CTB trained 58 health care workers (HCWs) (21 female, 37 Male) on TB diagnosis and case management at Juba POC and Mingkaman IDP camp. Between October 2015 and July 2016, the total number of cases diagnosed and enrolled on treatment increased to 449 compared to 194 between October 2014 to September 2015. However, CTB could not obtain the treatment success rate due to inaccessibility to the POC because of the recent conflict in the country.

Sub-objective 2. Comprehensive, high quality diagnostics

The CTB key intended result is to provide quality assured TB diagnostic services to all people with presumptive TB in South Sudan. Nationwide, only 6% (78/1,300) of health facilities provide TB services and 32% (38/120) are providing diagnostic services in 3 CTB targeted states (Central, Eastern and Western Equatoria States). In addition, the DR-TB diagnostic capacity in the country is still limited at the central level (CRL) with only 2 available GeneXpert machines. The WHO estimates the prevalence of multi-drug resistant (MDR-TB) among new and retreatment TB cases in South Sudan at 2.2% and 11% respectively (WHO report 2015).

The use of GeneXpert testing is a new concept in South Sudan. The GeneXpert algorithm includes the screening of TB among people living with HIV (PLHIV), retreatment cases, failure of treatment at 5 months, MDR suspects and MDR contacts. An assessment was completed in the 3 states where 10 health facilities have been integrated and equipped with LED microscopes, starter kits and 40 TB lab registers were printed and distributed to the newly integrated labs. The expansion of the EQA networking plan is a continuous process. A total of 45 HCWs (lab technicians and county TB focal persons) were supposed to be trained on slide randomization with the purpose to decentralize the EQA activities to states in Quarter 3, however, the training was impossible due to the recent July 2016 conflict at which time most of the facilities became inaccessible (See Table 2).

Table 2: Sub-objective 2. Comprehensive, high quality diagnostics

No.	Outcome Indicators	Indicator Definition	Baseline (Year/ timeframe)	Target Y2	Result Y
2.1.2	A current national TB laboratory operational plan exists and is used to prioritize, plan and implement interventions.	**Description**: This indicator measures whether or not a country has a defined TB laboratory operational plan (work plan) within the larger National TB Strategic Plan or National Laboratory Strategic Plan. The country and partners use the operational plan to design and implement priority activities to strengthen TB diagnostic services and the network for TB control. Indicator Value: Score based	0=not available	1=draft available	0=not available

		on the following: 0= Operational plan not available 1= Operational plan available 2= Operational plan available and follows standard technical and management principles of a quality work plan required for implementing the necessary interventions to build and strengthen the existing TB laboratory network (reference: "Practical Handbook for National TB Laboratory Strategic Plan Development			
2.2.1	Number of laboratories/% of laboratories enrolled in EQA for smear microscopy	**Description**: Proportion of laboratories enrolled in External Quality Assessment for smear microscopy Indicator Value: Percent **Level**: National and Challenge TB geographic areas **Numerator**: Number of laboratories enrolled in EQA for smear microscopy **Denominator**: Total number of laboratories performing smear microscopy	38% (30/78) laboratories	83% (65/78) laboratories	63% (49/78) laboratories
2.2.2	Number/% of laboratories showing adequate performance in external quality assurance for smear microscopy	**Description**: Performance of EQA is just as important as having EQA established. This indicator measures the percent of laboratories enrolled in EQA for smear microscopy that successfully passed EQA in the last reporting period. Indicator Value: Percent **Level**: National and Challenge TB geographic areas **Numerator**: Number of laboratories that successfully passed EQA for smear microscopy **Denominator**: Total number of laboratories enrolled in EQA for smear microscopy	93% (28/30) laboratories	85% (55/65) laboratories	93% (46/49) laboratories

2.2.6	Number and % of TB reference laboratories (national and intermediate) within the country implementing a TB-specific quality improvement program i.e. Laboratory Quality Management System (LQMS).	**Description**: This indicator measures the percentage of TB reference laboratories in the country that are implementing a quality management system for continuous improvement of all aspects of laboratory operations to assure accuracy and reliability of testing, disaggregated by national and intermediate **levels**. Provide a score/rating for every reference laboratory implementing LQMS, either the "GLI Stepwise Process towards TB Laboratory Accreditation" (scoring = phase 1-4) or SLIPTA/SLMTA for TB (scoring=stars 1-5). Indicator value: Number and percent (**Reference**: Laboratory Quality Management Systems Handbook; http://www.who.int/ihr/publications/lqms/en/) Numerator: Number of TB reference laboratories implementing a quality improvement program Denominator: Total number of TB reference laboratories in the country Level: National and/or Intermediate	0% (0/1)	100% (1/1)	0% (0/1)
2.2.7	Number of GLI-approved TB microscopy network standards met	**Description**: This indicator measures whether or not a country has met the 11 GLI-approved standards for the TB microscopy network. A CTB checklist is provided to assess fulfilment of the requirements for each standard. Identify numerically (1-11) which standard(s) have been met. (Reference: "TB Microscopy Network Accreditation: an assessment tool"; http://www.who.int/tb/laboratory/ microscopy-network-accreditation-assessment-tool.pdf) Indicator value: Number **Numerator**: Total number of standards met (NE=not	2 GLI-approved standards (July 2015)	3 GLI-approved standards	4 GLI-approved standards met (1,3,6 & 11)

		evaluated, 0=no standards have been met).			
2.3.1.	Percent of bacteriologically confirmed TB cases who are tested for drug resistance with a recorded result.	**Description**: This indicator measures the percentage of bacteriologically confirmed TB cases that are tested for drug resistance and also have results recorded in the TB register (disaggregated by new and previously treated cases). Drug resistance testing includes phenotypic (culture DST) and genotypic (molecular DST by GeneXpert, LPA or other molecular technologies). Indicator Value: Percent **Level**: National and Challenge TB geographic areas **Numerator**: Number of bacteriologically confirmed TB cases that are tested for drug resistance and have results recorded in the TB register. **Denominator**: Total number of bacteriologically confirmed TB cases notified during the reporting period	6.7% (52/781) of the previously treated patients nationally (December 2014)	15% of previously treated patients nationally	National=6 % (26/412) previously treated (October 2015 to January 2016)
2.3.9	# of samples transported for GeneXpert testing	**Description**: This indicator measures number of samples transported from health facilities to GenXpert site for testing for drug resistance (disaggregated by new and previously treated cases) **Indicator Value**: number **Level**: National **Numerator**: Number of samples transported	55 samples (July 2015)		513 samples (October 2015 to Jan 2016) Cartridge stock-out from mid-January to June 2016)

Key Results

Expansion of TB laboratory services

1. CTB procured and distributed 30 LED microscopes to seven states including the 10 newly integrated laboratories. From December 2015 to July 2016, the project trained 26 (22 male and 4 female) laboratory staff on the use of LED microscope. To ensure the quality laboratory services, three quarterly review meetings and mentorships were been conducted.

2. Increase coverage of External Quality Assessment

During year 2, a total of 49 laboratories have been enrolled in the nationwide EQA network, which shows an increase of 40% (35 to 49) from the previous year. During Year 2, 93% (46/49) of the laboratories showed 100% true positive result in EQA. This is an improvement when compared to 86% in 2015. The improvement is attributed to the training and mentorship of Lab technicians and frequent joint supportive supervision.

Image 1. Session on LED microscopy

Image 2. Microscopy of Auramine stained slides

Image 3. Staining using Auramine method (Juba)

Image 4. Participants and facilitator in Yambio

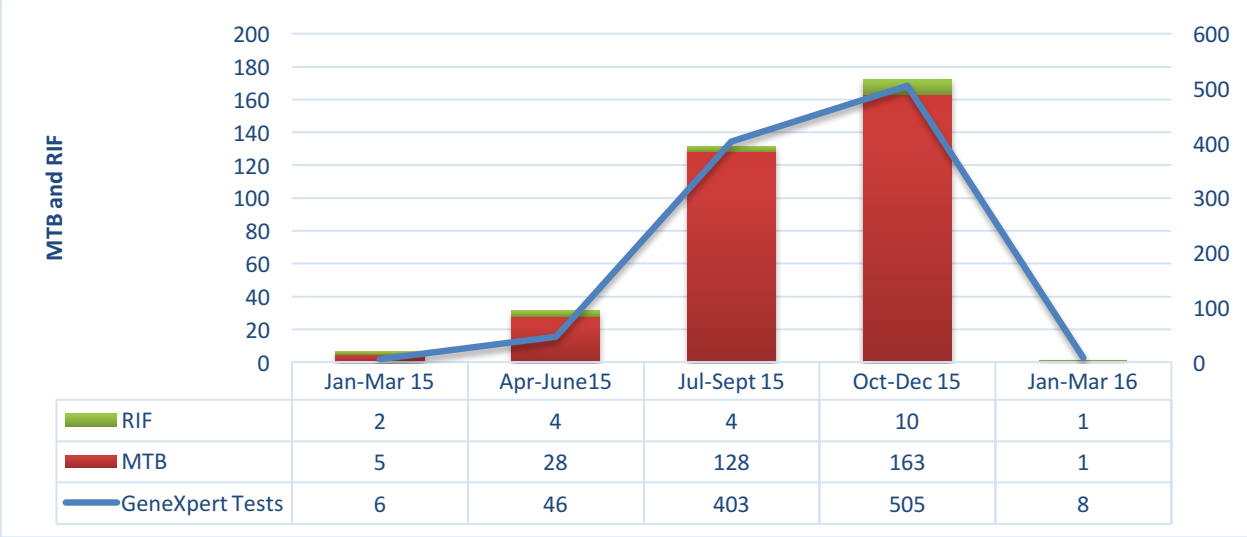
1. Improved on the GeneXpert Utilization in South Sudan

Since the introduction of GeneXpert testing in 2015, the surveillance for MDR-TB among TB cases has increased. Transportation of samples has been accelerating since July 2015. Between 2015 and 2016, a total of 962 samples were transported in the country. One boda boda rider has been contracted to transport the samples from three (TBMUs) sites (Juba Teaching Hospital, Kator and Munuki PHCCs) within Juba City. Each week day, the rider visits each of the three locations, delivers results from samples from the previous day and collects new samples for GenXpert testing and brings them to the CTRL.

The South Sudan Algorithm for GeneXpert testing recommends the following:
1. Retreatment cases
2. Failure of treatment at 5 months
3. TB among PLHIV
4. MDR-TB contacts

Sample transportation has increased from 455 in year 1 (as of September 2015) to 513 in year 2 (as of January 2016). Despite this success, sample transport stopped during the first week of January 2016 due to a stock-out of cartridges in the country (See Figure 2, below).

Figure 2: Number of RIF-resistant cases diagnosed using GeneXpert among the retreatment and new cases 2015- 2016



Sub-objective 3. Patient-centered care and treatment

The involvement of communities in TB prevention, care and control has been scaled up in the CTB intervention areas. During year 2, CTB subcontracted four local partners or CBOs to implement community TB in four high populated counties that include (Juba, Yei, Morobo and Mundri). Lainya County was directly supported by the CTB technical team through community mobilizers. The CTB project has conducted intensified TB case finding at the health facility and community levels among high risk and hard to reach populations in the four counties mentioned above. In collaboration with the NTP, CTB increased coverage and improved integrated TB prevention, care and control at the community level (See Table 3).

Table 3: Sub-objective 3. Patient-centered care and treatment

No.	Outcome Indicators	Indicator Definition	Baseline (Year/ timeframe)	Target Y2	Result Y
3.1.1	#/% of cases notified by setting (e.g., private sector, pharmacies, prisons) and/or population (e.g., gender, children, miners, urban	**Description**: The number of TB cases all forms (i.e. bacteriologically confirmed plus clinically diagnosed, new and relapse) reported by the NTP disaggregated by setting (i.e. private sector, pharmacies, prisons, etc.) and/or population (i.e., gender, children, miners,	57% (4,666/8,222) in the targeted states of CES, WES, and EES (2014)	10% increase from the baseline	National = 10,37 CTB areas = 52% (5,344/10,377) (CES, WES & EES) CI= 5% (183/4020)

	slums) and/or case finding approach	urban slums, etc.) and/or case finding approach (ICF, ACF, CI). Private sector providers should be described according to context and case finding approach, for example, type of provider targeted (i.e. ,for profit medical clinics, pharmacists, informal providers, private hospitals, etc.) **Indicator Value**: Number and where available, percent Level: National and Challenge TB geographic areas **Numerator**: Number of TB cases all forms (bacteriologically confirmed + clinically diagnosed; includes new and relapse cases) reported (by setting/ population/ case finding approach) nationally and in Challenge TB geographic areas in the past year **Denominator**: Total number of TB cases (all forms) notified nationally and in Challenge TB geographic areas			(Yei, Lainya, Morobo, Juba & Mundri) IDP/PoC = 12% (449 /3,888) for (Juba & Mingkaman) CRS = 4% (160/4010) (Yei, Morobo, Juba & Mundri)
3.1.4.	# of MDR-TB cases detected	**Description**: Total number of bacteriologically confirmed MDR-TB cases diagnosed. Project should follow the MDR-TB/Xpert algorithm in country regarding whether Rifampicin-resistant TB cases (RR-TB) should be counted as confirmed MDR-TB. If a country's algorithm states that a RR-TB cases is automatically assumed to be MDR-TB (i.e. no further DST required), then RR-TB should be included in the number of confirmed MDR-TB cases diagnosed. Otherwise, RR-TB should be excluded until proven via further DST that the case is a confirmed MDR-TB case. Indicator Value: Number **Level**: National and Challenge TB geographic areas **Numerator**: Number of bacteriologically confirmed MDR-TB cases diagnosed during the reporting period	4 cases	20 cases	11 cases detected (October 2015 to January 2016)

3.1.20	# of contacts diagnosed with TB and enrolled on treatment	**Description**: Number of TB cases diagnosed (all forms) Via contact tracing and enrolled on treatment Indicator Value: Number **Level**: Challenge TB geographic areas **Numerator**: Number of notified TB cases (bacteriologically confirmed + clinically diagnosed; includes new & relapse cases) through contact investigation	28 (bacteriologically confirmed) contacts diagnosed with TB and enrolled in treatment (September 2015)	5% increase from the baseline	40 (smear positive) - 32% increase from the baseline (October 2015-July 2016)
3.1.13	#/% of presumptive TB patients referred by community referral systems	**Description**: Proportion of presumptive TB patients referred by community referral systems **Indicator Value**: Percent Level: National and Challenge TB geographic areas **Numerator:** Number of presumptive TB patients referred by community referral systems **Denominator**: Total number of presumptive TB patients	182 (September 2015)	10% increase above the baseline	27% (192/706) Coverage (Juba, Yei and Morobo Counties)
3.2.1.	#/% of TB cases successfully treated (all forms) by setting (e.g., private sector, pharmacies, prisons) and/or by population (e.g., gender, children, miners, urban slums)	Description: The proportion of a cohort of TB cases (all forms, bacteriologically confirmed and clinically diagnosed, new and relapse) registered in a specified period that were successfully treated, whether with bacteriologic evidence of success ("cured") or without ("treatment completed") by setting (i.e. private sector, pharmacies, prisons, etc.) and/or by population (gender, children, miners, urban slums, etc.) and/or risk population groups defined by national policy (IDUs, diabetics, prisoners, etc.). There may be overlap between settings and groups. Disaggregation by risk population is required in contexts where Challenge TB is providing treatment support for a specific group according to the annual work plan or in contexts where operations research allows for disaggregation and comparison across groups. Indicator Value: Percent	54.6% (2019/3698) CES 54.6%, WES 47.6%, EES 59.3%	80% by the end of the year	National=78% (2870/3696) (July 2014-June 2015) WHO 2014 Coho (71%,8980) CTB=68% (1132/1656)

		Level: National and Challenge TB geographic areas Numerator: Number of new and relapse TB cases (all forms) registered in a specified period that were cured or completed treatment Denominator: Total number of new and relapse TB cases (all forms) registered in the same period			
3.2.4	# of MDR-TB cases initiating second-line treatment	Description: The number of bacteriologically confirmed, clinically diagnosed or unconfirmed MDR-TB cases started on second-line treatment during the reporting period. Unconfirmed MDR-TB cases are those awaiting C/DST results. RR-TB may fall under confirmed or unconfirmed depending on the country's MDR-TB diagnosis algorithm. Indicator Value: Number Level: National and Challenge TB geographic areas Numerator: The number of confirmed or unconfirmed MDR-TB patients started on second-line treatment in the reporting period	N/A	N/A	N/A To date, there is no MDR-TB treatment in the country. The NTP through WHO support, is in the process of developing Programmatic Management of Drug Resistance (PMDT) guideline and adopting the use of the short regimen
3.2.7	#/% of MDR-TB cases	Description: The proportion of confirmed MDR-TB patients successfully treated (cured plus completed treatment) among those enrolled on second line TB treatment during the reporting period (where applicable disaggregation by HIV status, XDR status). RR-TB may fall under confirmed MDR-TB depending on the country's MDR-TB diagnosis algorithm. Indicator Value: Percent Level: National and Challenge TB geographic areas Numerator: Number of confirmed MDR-TB cases successfully treated (cured plus completed treatment) Denominator: Total number of confirmed MDR-TB patients enrolled on second line TB treatment during the reporting period.	N/A	N/A	N/A

3.2.20	#/% of health facilities providing Community based DOTS (CB-DOTS) services	Description: This indicator measures CB-DOTS service coverage by looking at the proportion of health facilities providing CB-DOTS services. Indicator Value: Percent Level: National and Challenge TB geographic areas Numerator: Number of health facilities providing CB-DOTS services Denominator: Total number of health facilities in the area	31% (38/120)	45% (55/120)	CTB area= 34.3% (41/120)

Key results (Sub-objective 3)

1. Improve access to TB treatment in Central and Eastern Equatoria States

CTB has supported the establishment of 17 TB treatment centres; four in Magwi County in Eastern Equatoria state; seven in Yei, three in Morobo and four in Juba Counties. The establishment of the treatment centers was followed by on-the-job trainings and the mentorship of 22 HCWs (15 male and 7 female). The trainings were focused on how to dispense anti–TB drugs, record patient data on a TB treatment card and promote adherence to TB medication. The treatment centers work closely with community mobilizers and HHPs to refer presumptive cases for TB diagnosis to the nearest diagnostic center.

2. Intensified case finding among PLHIV

CTB supported the transportation of sputum samples from three TBMUs in Juba (Juba Teaching Hospital, Munuki and Kotor PHCCs); PLHIV are being tested for TB with GeneXpert in the TB CRL. From October to December 2015, a total of 32 PLHIV were tested with Xpert, of which 13% (4/32) were Mycobacterium TB positive (among those who were positive, one [25%] was also RIF resistant).

3. Contact investigation (CI)

In July 2015, CTB started to implement CI activities in Lainya, Yei and Morobo through community mobilizers. In April 2016, four CBOs were subcontracted to expand CI coverage to Juba, Mundri, Yei and Morobo while Lainya remained as CTB control area (See Figure 3)**.**

Figure 3: Map of CTB contact investigation coverage

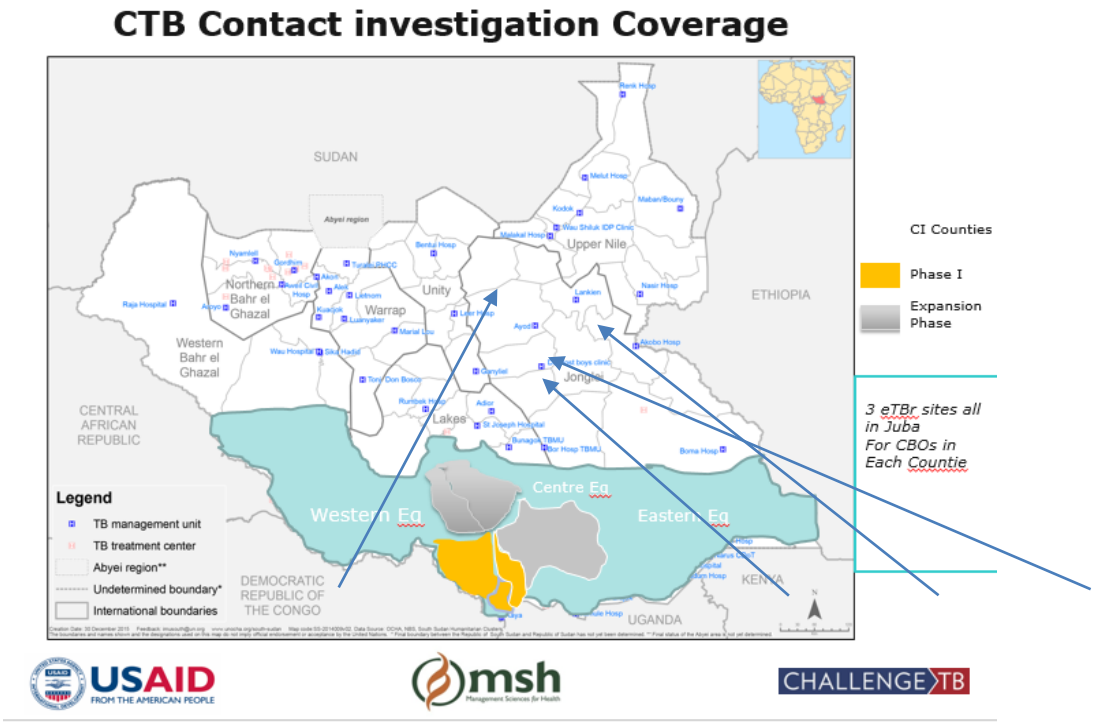


Table 4: CI activities

CI activities	MRDA	YMC	SPEDP	ART	Lainya
Intervention Areas	Mundri East & West	Yei	Morobo	Juba	CTB
Estimated Population, 2015	101,065	267,656	137,485	488,510	118,471

Contact investigation is one of the key interventions of CTB (See Table 4, below). A total of 1,651 index cases were identified and listed through TBMU registers, 333 (20%) were traced and received home visits from the HHPs. Through these home visits, 2,824 contacts were registered and screened using a standard TB screening form containing the four cardinal symptoms of TB. Among the contacts screened, 16% (451/2,814) were children between the ages 0-14. And 17% (476/2,824) of the contacts were identified as presumptive TB cases. After testing, 8% (37/476) were bacteriologically confirmed TB cases (no clinically diagnosed or extrapulmonary TB cases notified). 71 child contacts were identified with active TB ruled out. Isoniazid Preventive Therapy (IPT) for children under the age of 5 has not yet been rolled out in the country due to lack of childhood treatment guidelines and therefore none of the children visited were put on IPT (See Table 5).

Table 5: Summary data on contact investigation Year 2 (October 2015 to September 2016)

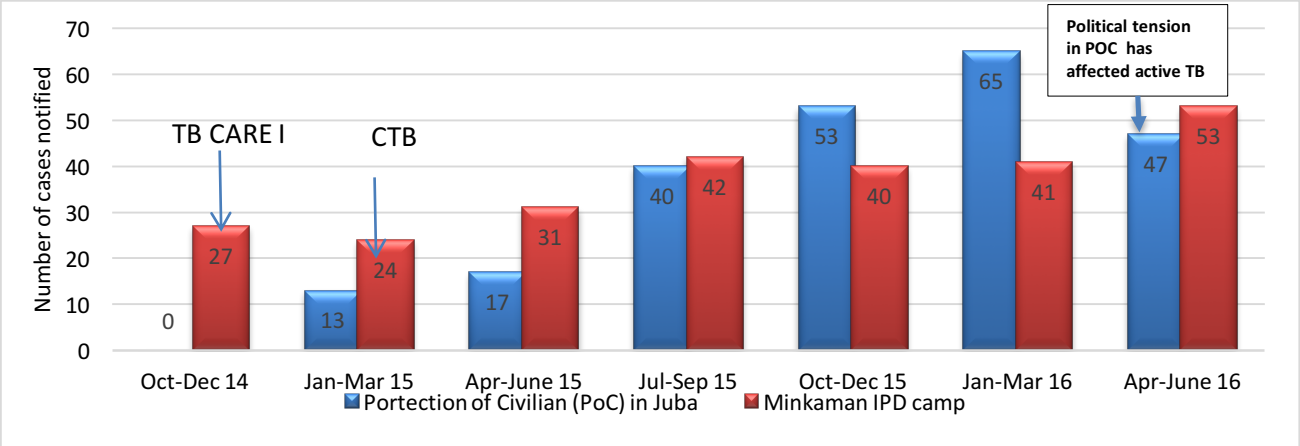
No.	VARIABLE	Oct–Dec 2015	Jan–March 2016	April - June 2016	Jul-Sept 2016	Total
1	Number of health facilities (HFs) implementing contact tracing (Yei, Lainya, Morobo, Juba & Mundri)	3	2	7	1	7
2	Number of index sputum smear positive cases diagnosed and registered	149	80	1,151	274	1,654
3	Number of index case households (HH) visited and contact screened for TB	52	44	170	67	333
4	Number of HH contacts registered and screened	416	960	1,177	271	2,824
5	Number of HH contacts registered and screened for TB, 0-14 years of age	21	48	317	65	451 (16%)
6	Number of contacts identified with presumptive TB, all ages	62	293	98	23	476
7	Percentage of contacts with presumptive TB, all ages	15%	30.5%	8.3% (98/1,177)	8.4% (23/271)	17% (476/2,824)
8	Percentage and number of HH contacts with presumptive TB, 0-14 years of age	5% (3)	10.5% (31)	3.7% (12)	7% (5/65)	11% 51/476
9	Number of SS+ TB cases identified among the contacts	12	5	15	5	37
10	Percentage of SS+ TB cases among contacts with presumptive TB, all ages	19.40% (12/62)	2% (5/293)	15.3% (15/98)	22% (5/23)	8% (37/476)
11	Percentage and number of all forms of TB among contacts with presumptive TB, all ages	33.90% (21)	33% (98)	54% (59)	22% (5/23)	38% (183/476)
12	Percentage and number of all forms of TB among contacts with presumptive TB, 0-14 years of age	8.10% (5)	9.60% (3)	8.33% (1)	0	16% (9/51)
13	Number of child contacts, 0-14 years of age without active TB	16	1	1	53	71
14	IPT initiated among eligible contacts 0-14 years of age (%)	N/A	N/A	N/A	N/A	N/A

4. Provision of services to displaced populations

During year 2, as a result of CTB support, quality TB services are more accessible to displaced populations. An assessment of health services was conducted in the Juba POC and Mingkaman IDP camp to identify unmet needs. Through collaboration with partners, IMC in Juba PoC, Health Link South Sudan in Mingkaman IDP camp and the NTP, HCWs were trained on TB diagnosis and case management. HCWs

were also trained on TB basics, identifying presumptive cases, referral for diagnosis, and follow-up care for TB patients to ensure treatment adherence. Through the NTP, and in collaboration with partners, CTB coordinated the provision of lab equipment, TB lab supplies, and TB drugs. Monitoring and supervision are regularly conducted jointly with NTP. The quality of TB laboratory services has been monitored by including the laboratories in the External Quality Assessment (EQA) network. CTB trained 58 HCWs (37 males and 21 females) on TB diagnosis and case management at POCs and IDP camps. CTB also procured and delivered lab equipment, supported the preparation of lab reagents and the distribution of LED microscopes as well as the quantification of TB drugs. From October 2015 to June 2016, 449 TB cases were diagnosed and enrolled in treatment within the intervention area (See Figure 4, below).

Figure 4: TB case notification in the IDP sites (October 2014-June 2016)

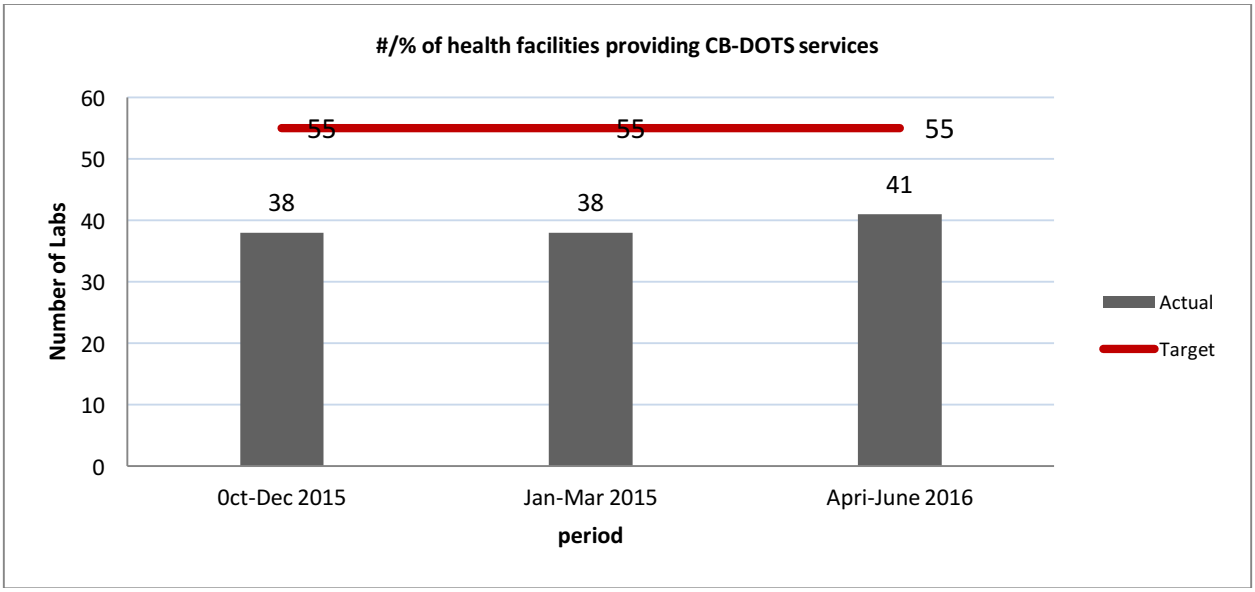


5. Community Referral System

From June to September 2016, CBOs conducted a total of 43 health education sessions in schools, churches and community gatherings. During the sessions, the participants were refreshed on the basic facts about TB, the roles of TB community mobilizers in TB case notification and TB control at the community level, their role in identifying symptoms of TB during TB screening in the community, the referral system from the community to the health facility, the challenges at each referral level and the roll out of contact exercises in Juba, Mundri, Lainya, Yei and Morobo counties. The sessions were attended by 4,516 (3,572 males and 944 females) out of which 192 were referred for diagnosis at the nearest TB microscopy centres and 64 (33%) were diagnosed with TB.

Image 5. Health education session at a school in Morobo County by the CBO SPEDP in June 2016

Figure 5: CB–DOTS services



Objective 2. Prevention

Sub-objective 5. Infection control

1. Introduction of TB Infection Control (TBIC)

During year 2 of the project, CTB, in collaboration with NTP and the Juba Teaching Hospital (JTH) administration conducted a two-day TBIC sensitization workshop for 14 staff (10 male and four females) at JTH. This workshop resulted in the formation of the first ever Infection Prevention (IP) Committee in the hospital. The terms of reference for the IP committee, comprehensive TBIC plan, and Health Facility Risk Assessment Checklist were discussed during the two day meeting. All workshop attendees were elected to be members of the larger IP committee which is headed by the chest physician in the hospital (the TBIC focal person). The committee was formally endorsed by the Director General of the hospital. A few of the selected staff in the committee will be selected to help roll out TBIC activities to the other facilities within Juba City. As part of TBIC control measures, procedures on the renovation of the cough booth (sputum collection site) within the hospital are in progress. While TBIC indicator data is not collected routinely, CTB has been engaging with the NTP and working to obtain their buy-in to include this indicator in its quarterly report (See Tables 6 and 7).

Table 6: Sub-objective 5. Infection control

#	Outcome Indicators	Indicator Definition	Baseline (Year/ timeframe)	Target Y2	Result Y
5.2.3.	#/% HCWs diagnosed with TB during reporting period	**Description**: This indicator measures the percent of HCWs diagnosed with TB (all forms) annually (disaggregated by gender and age). This measurement may require a special study using a validated tool and/or methodology.	0 (July–September 2015)	5% increase of new TB cases compared to baseline	2 HCWs diagnosed with TB 1=Lainya PHCC (Lainya County)

		Indicator Value: Percent **Level**: National and Challenge TB geographic areas **Numerator**: Number of HCWs diagnosed with TB (all forms) during past year Denominator: Total number of HCWs in the same year			and 1 Rocky city (Juba County)

Table 7: Sub-objective 6. Management of latent TB infection

#	Outcome Indicators	Indicator Definition	Baseline (Year/ timeframe)	Target Y2	Result Y
6.1.2.	% of eligible persons completing LTBI treatment, by key population and adherence strategy	**Description**: This indicator measures the percent of eligible persons completing LTBI treatment, by key population and adherence strategy according to national policy **Indicator Value**: Percent Level: National and Challenge TB geographic areas **Numerator**: Number of eligible persons completing LTBI treatment **Denominator**: Total number of eligible persons	N/A	N/A	N/A
6.1.11	# of children under the age of 5 years of age who initiate IPT	**Description**: The number of children under the age of 5 years who initiate isoniazid preventive therapy (IPT) during the reporting period. Indicator Value: Number Level: National and Challenge TB geographic areas **Numerator**: The number of children under the age of 5 years who initiate IPT during the reporting period.	0 (2014)		N/A

Objective 3. Strengthened TB Platforms

During year 2, CTB supported the engagement of the private sector in TB control in Juba City. After conducting a mapping exercise for the integration of TB services in private health facilities in Juba City, 17 out of the 26 private health facilities assessed were found to be eligible for TB service integration. CTB supported the development of the urban Directly Observed Treatment Short Course (DOTS) strategy, which was shared with (and supported by) the USAID mission. This strategy was shared with the NTP and the NRL, which are key in urban DOTS implementation. In year 3 of the project, the CBO working in Juba, AIDS Resistance Trust (ART) will be trained to play an important role in the implementation of the urban DOTS activities in Juba City. Furthermore, CTB has supported the development of a Memorandum of Understanding (MoU) between the private health facilities and the MOH (See Tables 8, 9 and 10).

Table 8: Sub-objective 7. Political commitment and leadership

#	Outcome Indicators	Indicator Definition	Baseline (Year/ timeframe)	Target Y2	Result Y
7.2.3	% of activity budget covered by private sector cost share, by specific activity	**Description**: This indicator measures the proportion of CTB project activity budget covered by private sector cost share (if not monetary, will require estimation of costs) by specific activity. **Indicator Value:** Percent **Level**: Nationally for activities at national scale and in Challenge TB geographic areas for activities focused in specific geographic areas where Challenge TB is working. **Numerator**: Amount of private sector cost share covering CTB project activity during most recent fiscal year **Denominator**: Total CTB project activity budget plus private sector cost share amount during the year of assessment.	N/A	N/A	CTB has not identified private corporation cost share in Year 2. The project will continue to explore opportunities in Year 3.

Table 9: Sub-objective 8. Comprehensive partnerships and informed community involvement

No.	Outcome Indicators	Indicator Definition	Baseline (Year/ timeframe)	Target Y2	Result Y
8.1.3.	Status of National Stop TB Partnership	**Description**: This indicator measures the status of National Stop TB Partnership by using special questionnaire for	0 (July 2015)	N/A	0

		collecting relevant country level data **Indicator Value:** The score based on below: 0= no National Stop TB Partnership exists 1= National Stop TB Partnership established, and has adequate organizational structure; and a secretariat is in place that plays a facilitating role, and signed a common partnering agreement with all partners; but does not have detailed charter/plan, and does not meet regularly/ produce deliverables; 2= National Stop TB Partnership established, has adequate organizational structure and in a participatory way has developed detailed charter/plan, but does not meet regularly and does not produce deliverables; 3= National Stop TB Partnership established, has adequate organizational structure, has developed detailed charter/plan, meets regularly and critical deliverables are produced **Level**: National			
8.1.4	% of local partners' operating budget covered by diverse non-USG funding sources	**Description**: This indicator measures the proportion of CTB project local partners' operating budgets covered by non-USG funding sources. A special questionnaire for collecting relevant country level data among CTB local partners is available. **Indicator Value**: Percent **Level**: Challenge TB geographic areas Numerator: Amount of CTB local partners' operating budgets covered by non-USG funding sources (TGF, WB, EU, ADB, DFID, private donations, investment income, other revenue, etc.) Denominator: Total operating budget of CTB local partners' operating budget (USG + non-	N/A	N/A	N/A

		USG sources) during the year of assessment.			
8.2.1	GF grant rating	**Description**: This indicator presents GF TB grant performance rating results **Indicator value**: Score is based on the following: A1 Exceeds expectations A Good performance A2 Meets expectations B1 Adequate B2 Inadequate but potential demonstrated C Unacceptable **Level**: National	B1 Adequate	A2 meets expectations	B1 Adequate

Table 10: Sub-objective 9. Drug and commodity management systems

#	Outcome Indicators	Indicator Definition	Baseline (Year/ timeframe)	Target	Result
				Y2	**Y**
9.1.1.	# of stock outs per [year] of anti-TB drugs, by type (first and second line) and level (ex, national, provincial, district)	Description: This indicator should be used to report the number of stock-outs of any type of TB drug at any level of the health system that results in interruption of treatment. Indicator Value: Number Level: This indicator should be reported at whatever level a stock-out that results in interruption of treatment occurs.	N/A	N/A	**(1 pediatric Anti TB drug stock out**

Quality data, surveillance and M&E

In year 2, CTB planned an STTA to initiate and roll out an electronic TB database system (e-TBr), and the procurement of a server and tablets for central level. In addition, CTB planned a training for county TB focal persons on the e-TBr system. Unfortunately, these activities did not take place due to the current conflict in the country.

CTB prepared and presented two posters at the 47th Union World Conference on Lung Health in Liverpool, UK in October 2016. The two posters are titled:

1. TB detection rates through community mobilization versus household contact investigation in rural South Sudan

2. Implementation of GeneXpert technology for rapid TB diagnosis in South Sudan, lessons learned

Table 11: Sub-objective 10. Quality data, surveillance and M&E

No.	Outcome Indicators	Indicator Definition	Baseline (Year/ timeframe)	Target Y2	Result Y2
10.1.4	Status of electronic recording and reporting system	**Description**: This indicator measures the status of electronic recording and reporting (ERR) **Indicator value:** Score based on below: 0=R&R system is entirely paper-based; 1=electronic reporting to national level, but not patient/case-based or real time; 2= patient/case-based ERR system implemented in pilot or select sites (TB or MDR-TB); 3=a patient/case-based, real-time ERR system functions at national and subnational levels for both TB and MDR-TB; 4= a patient/case-based, real-time ERR system is functional at national and subnational levels for both TB and MDR-TB completely and meets WHO standard for TB surveillance data quality -	2= patient/case-based ERR system implemented in pilot or select sites (TB)	2= patient/case-based ERR system implemented in pilot or select sites (TB)	2= patient/case-based ERR system implemented in pilot or select sites (TB) (3 in Juba County and 1 in Yei County)

		i.e., data in the national database are accurate, complete, internally consistent, within timelines set, validated and free of duplicates and a data quality audit system is put in place (source: Standards and Benchmarks for Tuberculosis Surveillance and Vital Registration Systems – Checklist and User Guide, WHO, 2014). **Level:** National			
10.2.1	Standards and benchmarks to certify surveillance systems and vital registration for direct measurement of TB burden have been implemented	**Description**: National TB surveillance system is certified based on WHO standards and benchmarks for TB surveillance and vital registration systems (for paper-based or electronic systems). For a country's TB surveillance systems to be certified as providing a direct measurement of TB cases and TB deaths, all 10 standards and their associated benchmarks (Part B, Section 1) should be met (source: Standards and Benchmarks for Tuberculosis Surveillance and Vital Registration Systems – Checklist and User Guide, WHO, 2014). The country standards and benchmarks score will be monitored as a sub-indicator to track progress. **Indicator Value**: Yes/No **Level**: National	No (July 2015)	N/A	No
10.2.6	% of operations research project funding provided to local partner (provide % for each OR project)	**Description**: This indicator measures the proportion of Challenge TB-supported operations research project funding provided to local partner(s), by each OR project.	N/A	N/A	N/A

		Indicator Value: Percent **Level**: Challenge TB geographic areas **Numerator**: Amount of operations research project funding provided to local partner by Challenge TB during a year **Denominator**: Total Challenge TB operations research budget during the year of assessment.			
10.2.7	Operational research findings are used to change policy or practices (e.g., change guidelines or implementation approach)	**Description**: For all Challenge TB-supported operation research projects implemented in a country, results of these projects are used to change policy or practices (ex. change guidelines or implementation approach). Relevant data are collected/ presented for each individual project by special report with qualitative details. **Indicator Value**: Yes/No Level: National	Yes (2014)	Yes	2 OR result will be presented at the Union Conference in Liverpool October 2016

Human Resource Development

CTB supported one NTP staff (the training officer) to attend a course on the Principles of TB Care and Prevention: Translating Knowledge to Action in Bulawayo, Zimbabwe from April 27 to May 2, 2016.

CTB supported the participation of three of its staff (Deputy Project Director, M&E and Lab Advisors) and one staff from the CRL in the Country Directors Meeting and laboratory training in The Hague, Netherlands in June and July 2016. CTB supported Acting Country Project Director and Deputy Project Director to attend the Global Fund (GF) Joint Partners Meeting in Nairobi, Kenya, Sep 26-30, 2016.

Table 12: Sub-objective 11. Human resource development

#	Outcome Indicators	Indicator Definition	Baseline (Year/ timeframe)	Target	Result
				Y2	Y
11.1.3	# of HCWs trained, by gender and technical area	**Description**: This indicator measures the number of healthcare workers (which includes health facility staff, community health volunteers, laboratory staff,	146 (trained and mentored)	859	367 Male=291 and Female=76

		sputum transport technicians, community-based DOTS workers) trained, by gender and sub-objective. Training includes any in-person, virtual, or on-the-job training that is longer than half a day and for which curriculum is available. This indicator is interchangeable with 'Number of individuals trained in any component of the WHO Stop/End TB Strategy with USG funding' which USAID missions may have as a requirement for internal agency reporting. **Indicator Value:** Number **Level**: National and Challenge TB geographic areas **Numerator**: Number of HCWs trained during the reporting period			
11.1.5	% of USAID TB funding directed to local partners	**Description**: This indicator measures the proportion of CTB annual funding directed to local partners **Indicator Value:** Percent **Level**: National. Although CTB may be working with local partners in specific geographic areas, the overall total going to local partners at any level should be included in the numerator and compared to the overall country budget. **Numerator**: Amount of CTB country project funding directed to local partners during the most recent fiscal year **Denominator**: Total CTB country project budget during the most recent fiscal year.	9% (215,000/2,502,000)	14% (200,000/1,371,000)	11% (280,000/2,452,800)

3. Challenge TB Support to GF Implementation

Table 13: Current GF TB grants

Name of grant & principal recipient *(i.e., Tuberculosis New Funding Model (NFM - MoH)*	**Average Rating***	**Current Rating**	**Total Approved/Signed Amount****	**Total Committed Amount**	**Total Disbursed to Date**
TB NFM June 2015—December 2017 (UNDP)	B1	B1	$15,512,412	$5, 8 M	N/A
TB/HIV TFM SSD-708-G11-T – UNDP 1 Jan 2014 – 30 June 2015	B1	B1	$18.7 M	$18.7 M	N/A
TB Round 5 SSD-506-G06-T - UNDP 1 Oct 2006 – March 2012	A2	A1	$22.9 M	$22.9 M	N/A

** Since January 2011*

*** Current NFM grant not cumulative amount; this information can be found on GF website or ask in country if possible.*

In-country GF status - key updates, current conditions, challenges and bottlenecks

South Sudan is classified as a non-Country Coordinating Mechanism (CCM) country, with UNDP and Population Services International as the principal recipients. Although the prime recipient does not require CCM approval, they are working closely with the interim CCM and are updating them regularly. The Principal Recipient of the GF (UNDP) has signed a letter of agreement with the sub-recipients. Two new sub-recipients have been recruited, including International Medical Corps (IMC) and the Catholic Organization for Relief and Development Aid (CORD AID) in addition to AAA (the long term sub-recipient covering 5 states and planning to expand to other counties). The contracts with the sub-recipients were signed in April 2016 to increase TB service coverage in South Sudan, especially in hard-to-reach areas (IDPs and POCs).

With regards to medications and supplies, during year 2:

- The first-line drugs procured through the UNDP arrived in South Sudan
- The construction work in the CTRL is complete and negative pressure has been installed and testing of the negative pressure is pending
    - Delays in the procurement of furniture have halted the installation of biosafety cabinets and other equipment.
- GeneXpert cartridges (3,500) procured by the Global Fund were received in the country on June 28, 2016.These cartridges were supposed to arrive in June 2015.
- More than 7 laboratories have been assessed for renovation and integration of TB services through the Global Fund

Challenge TB involvement in GF support/implementation and actions taken during year 2

The current political situation triggered by the July 2016 conflict in Juba, led to the Global Fund Technical Advisory and Partnership Unit and the country team to arrange for a meeting in Nairobi, Kenya, from September 26-30, 2016. The purpose of this meeting was to discuss program reviews, the reprogramming of activities, and to develop a new implementation plan to determine which activities can realistically be implemented before December 2017 as well as identify possible savings. An additional focus was put on IDPs, POCs sites within UN Mission bases, and refugees. It was further agreed that a joint mission with partners and other in-country stakeholders would be undertaken to

conduct these program reviews and plan the implementation of activities for the delivery of essential services. Based on this, the Challenge TB (CTB) team was among those invited to attend the meeting.

The immediate recommendations from the Partners meeting was that CTB South Sudan should be proactively engaged with

A) The in-country mission either in Juba (if security clearance allows) or in Geneva to brief the MOH and obtain its inputs for implementation where PRs and technical partners should brief the MOH about proposals and obtain inputs for proposed reprogrammed activities and budgets

B) With PRs and other partners and in-country stakeholders, to finalize and submit the revised grant documents (workplans, budgets, performance frameworks, health product lists) to the GF by October 31, 2016

Partners collaboration activities

CTB is the secretariat to the TB M&E Technical Working Group that calls for meetings to harmonize implementation of activities and share tasks among partners.

In collaboration with the NTP, CTB support activities at the CTRL. CTB trained 38 (35 males and three females) laboratory technicians from four states to roll out EQA activities to the regions. CTB helped expand TB services by integrating 10 additional laboratories, training 26 laboratory staff (22 males and 4 females) on the use of LEDs and distribution of LED microscopes. CTB has worked in collaboration with the PR and SR in Lab data collection and analysis on a quarterly basis.

CTB has worked to take stock of slides from HFs, reallocating slides from locations with a surplus to those with shortages. CTB has also printed and distributed a small quantity of lab registers to newly integrated labs and those with stock-outs. This has alleviated the shortages experienced in the country. CTB's M&E efforts support biannual external Data Quality Assessment (DQA) by GF/Local Fund Agency (LFA) organized though the UNDP.

4. CTB Success Story

Empowering *Community-Based Organizations to Fight TB*

Kiden Selina exudes confidence as she talks excitedly about completing the training of trainers organized by USAID-funded Challenge TB for community-based organizations in Juba, South Sudan.

Decades of war and underdevelopment in South Sudan mean that rural communities have limited access to healthcare. Involving community-based organizations is a key part of increasing access to information and TB services for rural communities in a country where the prevalence of TB is estimated to be 257 people per 100,000.

Selina a field supervisor for Yei Martha Clinic, supports and supervises home health promoters (HHPs) and compiles reports on their activities. As a new recruit her knowledge of TB was very limited, but the training introduced the basics of TB, community-based TB prevention and control approaches, DOTS strategies and management, donor financial policies, monitoring and evaluation, and reporting. This newly acquired knowledge has given her inspiration and confidence.

"I learned how to prevent TB, how one can get infected, and how to conduct contact investigations", she said. "This training has taught me what I need to know about TB in order to do my work. I am reaching out to the youth in the villages and those who are affected by TB so that they can get treatment they need", said Selina. "We travel to the villages of TB patients who are undergoing treatment to investigate their close and household contacts, and bring those with TB symptoms to the hospital for diagnosis".

Shadrach Kia, Program Coordinator for AIDS Resistant Trust said "It's not only health professionals who should be concerned with the management of TB patients: fighting TB in South Sudan is everyone's challenge". "The training encouraged me to contribute to the fight against TB, and we are going to get everybody involved - our community leaders, church leaders, youth and women leaders - because everybody is at risk of contracting TB".

Kiden Selina (left) photographed with colleagues during the training session in Juba, South Sudan.

Following the training, 1,448 household contacts of 280 TB index cases were screened and 121 presumptive TB cases were identified, of which 20 were sputum smear positive. HHPs engaged in community mobilization and TB education, which led to the screening of a further 3,387 people, which identified 32 presumptive TB cases of which six were bacteriologically confirmed TB cases.

Mary's Story

When Mary Yeno was one month old she wasn't breast feeding properly, she was very thin and had developed a cough which won't go away. She was diagnosed with pulmonary TB when only four months old, and at the time of diagnosis she only weighed 4.2kg. When Challenge TB-trained community TB mobilizers searched for the source of Mary's infection through contact investigation, they discovered that her father was also infected with pulmonary TB.

Mary and her father were started on anti-TB treatment in November 2015, and Challenge TB-supported TB community mobilizers in Lainya followed-up to make sure they both finished the six-month course of treatment.

Mary after two weeks on anti-TB treatment

Both Mary and her father completed their treatment in April 2016 and have been declared cured of TB. Their successful treatment success has helped to reduce the stigma surrounding TB in their community and also removed the myth that the disease is the result of witchcraft. Mary's appetite has returned to normal and her weight has increased to 7.6 kg, she is healthy and is having fun playing with the neighboring children.

Her mother said peace has finally come back to their family, and she thanked the Challenge TB team and the community mobilizer for diagnosing and treating their sickness and saving both her husband and daughter's lives.

Mary and her elder sister after finishing her treatment during the third visit by the CTB team

5. Operational Research

Table 14: Operational research

Title of OR study	Local partners involved in study	Implementation Status	Key findings	Dissemination
TB detection rates through community mobilization versus household contact investigation in Rural South Sudan	ART in Juba County YMC in Yei County SPEPD in Morobo county MRDA in Mundri County	The OR started in July 2015 and is ongoing to year 3	Between July and September 2015, community mobilizers reached 10,740 people with TB health education messages. Three percent of the cases reached were identified as (325/10,740) presumptive TB cases and were referred for laboratory investigation, with 1.5% (5/325) diagnosed as bacteriologically confirmed TB cases. Using the CI initiative, 892 bacteriologically confirmed index cases were registered, and 107 index case households were visited. Among the contacts screened, 21.3% (182/853) presumptive TB cases were identified, of which 15.4% (28/182) were bacteriologically confirmed cases	The study is ongoing and will continue in the year 3 workplan through a collaboration with one local partner
Implementation of GeneXpert technology for rapid TB diagnosis in South Sudan, lesson learnt Subtitle: MTB diagnostics, including drug resistance determination	NTP and CRL	On-going	Through CTB, 973 samples were tested (January to December 2015) with Xpert, of which 934 had valid results. 26.0% (242/934) of the valid results could not be categorized due to missing information. Rifampicin resistance was 0.7% among new patients, 11.3% among re-treatment, 2.8% among PLHIV, and 2.1% in uncategorized patients. Among smear negatives, 36.1% (211/585) were bacteriologically confirmed cases using GeneXpert testing.	The study is ongoing and will continue in the year 3 workplan.

Table 15: Key challenges during implementation and actions to overcome them

Challenge	Actions to overcome challenges
Technical	
The ongoing political crisis has resulted in an increase in the insecurity in the country which has affected the relatively stable states of Central, Eastern and Western Equatoria States. This has affected project implementation, specially community activities, including contact tracing, quarterly review meetings and joint support supervision	Rely on local CBOs on the ground, close follow-up through email and phone communications with project staff in the field CTB is focusing and strengthening the work of the CBO working in Juba city since the other counties are not accessible due to insecurity in the country
Delayed in procurement of GeneXpert cartridges by the GF/UNDP had affected the sample testing from Jan-June 2016)	The CTB TB lab focal person is closely following-up with the NTP and UNDP and 3,500 cartridges were delivered in June 2016. CTB initiated the procurement of 'boda boda' for samples transportation. Additionally, CTB is procuring 1,000 triple packaging containers
Delayed endorsement of the key documents (NSP, guidelines, SOPs and manuals) by MOH authorities. This has delayed the following activities: Childhood TB implementation, Public Private Mixed DOTs(PPM DOTs)	CTB is closely following up with the NTP to obtain their endorsement of the materials.
The MOH, through the Director General of the National Public Health Laboratory, preferred that CTB support the development of the national lab strategic plan rather than having a separate TB strategic plan. This has derailed the planned STTA for the development of TB strategic plan.	The consultant advised that the country update the TB laboratory manual but South Sudan has already completed this manual. CTB advised the MOH on the importance of having a separate TB laboratory strategic plan. The planned STTA for the development of the TB laboratory strategic plan was pushed to APA3 due the current insecurity in the country.
Delayed development of childhood and multi drug resistant TB (MDR-TB) guidelines has stalled the process of initiating IPT and enrolling child MDR-TB patients in treatment in South Sudan.	The process of developing a childhood protocol through the GF has been put on hold due to the current crisis in the country.
Administrative	
Lack of funds available with CBOs to implement community TB activities which had affected their work plan timeframe. Though the contracts were signed as of April 1, 2016, implementation began in June 2016. The contracts with the CBOs were on a reimbursement basis and the CBOs were not getting paid on a regular basis.	CTB requested that the MSH contract office provide cash advances to the CBOs. The issuing of these advances has helped the CBOs to start their implementation of activities

Dr. Stephen Macharia resigned from the position of Project Director as of April 29, 2016.	To fill Stephen's gap and ensure a proper and smooth transition, Dr, Berhanemeskal Assefa, MSH's Principal Technical Advisor on TB, took on the role of Acting Project Director for CTB South Sudan for 10 weeks. Dr. Berhane was based in South Sudan until the current insecure situation which forced him to be evacuated on July 12, 2016. He has continued in his role of Acting Project Director working remotely from Ethiopia and is in touch with staff in South Sudan, the Mission, MSH HQ and PMU on a regular basis. The hiring for a new Project Director is in process and Dr. Berhane will return to South Sudan when the situation in the country is stabilized.

6. Lessons Learned/ Next Steps

1. The provision of TB services among the refugees and displaced populations with collaboration with implementing partner has been successful. TB services have been fully established in Juba POC fully as of August 2015. CTB supported the training of HCWs, HHPs and laboratory staff and equipped the laboratories with TB diagnostic equipment.

2. Access to quality diagnosis is key for ensuring the identification of TB cases in the community. The assessment of health facilities using a simplified tool can determine and prioritize where TB microscopy can be established. Involvement of the health facility management and technical staff is key for uptake of these services. Human resources and poor structural infrastructure remains a challenge. With proper approaches, the health facilities that meet minimum requirements are willing to establish TB microscopy. An on-hand training and mentorship program for the laboratories staff has been shown to be more effective than classroom training. This strategy will continue in the year 3 workplan.

3. The introduction of a new TB diagnostic mechanism has been shown to motivate the TB HCWs. GeneXpert uptake has increased following the sensitization of HCWs at all levels of TB control. The new technology has been embraced as is demonstrated by a high number of samples being transported to the GeneXpert site for testing. This has created a strong collaboration between the clinicians and laboratory staff. The efficiency of the HCWs and the visible collaboration between clinicians and laboratory staff has motivated the NTP to support GeneXpert testing in the country. The project intends to roll out GeneXpert testing to more sites and to work closely with the NTP to ensure that the GeneXpert machines have been procured through the Global Fund during year 3 of the project.

4. Improved collaboration between the NTP and CTB has resulted in an expansion of an EQA network for peripheral laboratories. NTP CTRL staff have been mentored and are currently being supported through CTB to carry out EQA supervisory visits to peripheral laboratories. Though the coverage for the country is still low due to insecurity and logistical challenges with travel, there has been an increase in EQA coverage in the three targeted states. The regular TWG for laboratory staff at the CTRL, the NTP and CTB staff has developed a plan to ensure that coverage has improved. TOT have been trained on EQA and are expected to decentralize EQA activities to the states. CTB will support the county TB focal people and train them on the sampling of slides. This will form part of their routine supervision in their respective counties. The outcome

will be to improve laboratory networking and the transportation of sampled slides from peripheral laboratories to the EQA central point during year 3 of the project.

5. Surveillance for MDR-TB among TB cases has increased since the introduction of GeneXpert testing at the CTRL. Use of boda boda riders has resulted in an increase in samples transported despite the cartridges challenges. The RIF-resistant cases have been identified early enough and samples have been transported to Nairobi for culture and DST. The turnaround time for the results that are sent to Nairobi is less than 24 hours compared to the previous turnaround time which took months.

6. Expansion of TB treatment centers can improve the accessibility to drugs and adherence to treatment. Mapping the patients on TB treatment and linking them with the nearest health facility has proven possible. The four counties of Yei, Morobo, Juba and Lainya are piloting the strategy and it has been affective.

Annex I: Year 2 Results on Mandatory Indicators as well as National Data on the Number of pre-/XDR-TB Cases Started on Bedaquiline or Delamanid

MANDATORY Indicators				
Please provide data for the following mandatory indicators:				
2.1.2 A current national TB laboratory operational plan exists and is used to prioritize, plan and implement interventions.	**National APA 2**	**CTB APA 2**	**CTB APA 2 investment**	**Additional Information/Comments**
Score as of September 30, 2016	0	N/A	**Moderate**	In year 2, CTB facilitated an STTA that helped update the TB manual. An additional STTA was planned to develop a TB laboratory strategic and operational plan. However, this didn't take place due to the July 2016 conflict in Juba.
2.2.6 Number and percent of TB reference laboratories (national and intermediate) within the country implementing a TB-specific quality improvement program i.e. Laboratory Quality Management System	**National APA 2**	**CTB APA 2**	**CTB APA 2 investment**	**Additional Information/Comments**
Number and percent as of September 30, 2016	0% (0/1)	N/A	**None**	The TB Reference Lab has undergone serious internal structural re-designing with four biosafety cabinets installed & laminar flow in place. About 95% of the work has been completed and the

				laboratory is expected to be functional by January 2017.
2.2.7 Number of GLI-approved TB microscopy network standards met	**National APA 2**	**CTB APA 2**	**CTB APA 2 investment**	**Additional Information/Comments**
Number of standards met as of September 30, 2016	4 GLI-approved standards met (1,3 and 6and 11)	4 GLI-approved standards met (1, 3, 6 and 11)	**Substantial**	Three met (1,3 and 6)
2.3.1 Percent of bacteriologically confirmed TB cases who are tested for drug resistance with a recorded result.	**National 2015**	**CTB 2015**	**CTB APA 2 investment**	**Additional Information/Comments**
Percent (new cases), include numerator/denominator	0.4% (2/559) July 2015-Jan 2016	N/A	**Substantial**	
Percent (previously treated cases), include numerator/denominator	6%(26/412) July 2015- Jan 2016	N/A		
Percent (total cases), include numerator/denominator	7% (255/3452) July 2015-Jan 2016	N/A		
3.1.1. Number and percent of cases notified by setting (i.e. private sector, pharmacies, prisons, etc.) and/or population (i.e. gender, children, miners, urban slums, etc.) and/or case finding approach	**National APA2**	**CTB APA2**	**CTB APA 2 investment**	**Additional Information/Comments**
Number and percent	*10, 377 (July 2015 - June2016)*	*CTB = 52% (5,344/10,377) CI=5%(183/4020) IDP= 12%(449/3,888) CRS= 4%(160/4010)*	**Substantial**	

3.1.4. Number of RR-TB or MDR-TB cases notified	National APA 2	CTB APA 2	CTB APA 2 investment	Additional Information/Comments
Total 2015	20		**Moderate**	Cartridges have been out of stock from January to June 2016
Jan-Mar 2016	1			
Apr-June 2016	0			
Jul-Sept 2016	0			
To date in 2016	21			
3.2.1. Number and percent of TB cases successfully treated (all forms) by setting (i.e. private sector, pharmacies, prisons, etc.) and/or by population (i.e. gender, children, miners, urban slums, etc.).	**National 2014 cohort**	**CTB 2014 cohort**	**CTB APA 2 investment**	**Additional Information/Comments**
Number and percent of TB cases sucessfully treated in a calendar year cohort	78% (2870/3696) (July 2014-June 2015) WHO 2014 Cohort (71%,8980)	68% (1132/1656)	**Substantial**	Data derived from 3 CTB geographical areas (CES, EES and WES)
3.2.4. Number of patients started on MDR-TB treatment	**National APA 2**	**CTB APA 2**	**CTB APA 2 investment**	**Additional Information/Comments**
Total 2015	0	0	**None**	To date, there is no MDR-TB treatment in the country. The NTP through WHO support, is in the process of developing Programmatic Management of Drug Resistance (PMDT) guidelines and adopting the use of the short regimen
Jan-Mar 2016	0	0		
Apr-June 2016	0	0		
Jul-Sept 2016	0	0		
To date in 2016	0	0		

3.2.7. Number and percent of MDR-TB cases successfully treated	**National 2013 cohort**	**CTB 2013 cohort**	**CTB APA 2 investment**	**Additional Information/Comments**
Number and percent of MDR-TB cases successfully treated in a calendar year cohort	N/A	N/A	**None**	No MDR-TB treatment exists in the country
5.2.3. Number and % of health care workers diagnosed with TB during reporting period	**National 2015**	**CTB 2015**	**CTB APA 2 investment**	**Additional Information/Comments**
Number and percent reported annually	N/A	3	**None**	In year 2, CTB introduced TBIC guidelines in Juba Teaching Hospital, formed a TBIC committee and TBIC plan. A TBIC assessment and renovation plan was developed in Munuki PHCC. TBIC activities will be rolled out to other main health facilities within Juba
6.1.11. Number of children under the age of 5 years who initiate IPT	**National 2015**	**CTB 2015**	**CTB APA 2 investment**	**Additional Information/Comments**
Number reported annually	N/A	N/A	**None**	Not routinely done
7.2.3. % of activity budget covered by private sector cost share, by specific activity	**National APA 2**	**CTB APA 2**	**CTB APA 2 investment**	**Additional Information/Comments**
Percent as of September 30, 2016 (include numerator/denominator)	N/A	N/A	**None**	Not routinely done
8.1.3. Status of National Stop TB Partnerships	**National APA 2**	**CTB APA 2**	**CTB APA 2 investment**	**Additional Information/Comments**
Score as of September 30, 2016	0	N/A	**None**	There is a National HIV/TB Task Force under the overall Health Cluster Committee, hosted by the WHO

8.1.4. % of local partners' operating budget covered by diverse non-USG funding sources	**National APA 2**	**CTB APA 2**	**CTB APA 2 investment**	**Additional Information/Comments**
Percent as of September 30, 2016 (include numerator/denominator)	N/A	N/A	**Limited**	In year 2, CTB subcontracted four CBOs (April-December 2016); however, due to funding and accessibility constraints, contracts for three of the CBOs will be terminated in October 2016. CTB will continue with only the CBO operating within Juba town. As a result of the termination of these contracts, the requested information for this indicator is not available
8.2.1. Global Fund grant rating	**National APA 2**	**CTB APA 2**	**CTB APA 2 investment**	**Additional Information/Comments**
Score as of September 30, 2016	B1	N/A	**Moderate**	The Global Fund grant was signed by the PR (UNDP). A New NFM grant cover period from July 1, 2015 to December 31, 2017.
9.1.1. Number of stock outs of anti-TB drugs, by type (first and second line) and level (ex, national, provincial, district)	**National APA 2**	**CTB APA 2**	**CTB APA 2 investment**	**Additional Information/Comments**
Number as of September 30, 2016	**2(1 paediatric Anti TB drug stock out)**	N/A	**Limited**	CTB is not engaged in this area, but it is involved in the quantification of anti- TB drugs
10.1.4. Status of electronic recording and reporting system	**National APA 2**	**CTB APA 2**	**CTB APA 2 investment**	Additional Information/Comments

Score as of September 30, 2016	1	3 (Pilots sites)	**Substantial**	CTB identified a consultant to support the development of an eTBr system. The project planned to procure and install the server at central level and to procure tablets but both activities have been delayed due to the current turmoil in country
10.2.1. Standards and benchmarks to certify surveillance systems and vital registration for direct measurement of TB burden have been implemented	**National APA 2**	**CTB APA 2**	**CTB APA 2 investment**	**Additional Information/Comments**
Yes or No as of September 30, 2016	No	N/A	**None**	The country is still developing the vital registration system. TB data to be included in the District Health Information System(DHIS) at national level.
10.2.6. % of operations research project funding provided to local partner (provide % for each OR project)	**National APA 2**	**CTB APA 2**	**CTB APA 2 investment**	**Additional Information/Comments**
Percent as of September 30, 2016 (include numerator/denominator)	N/A	N/A	**None**	
10.2.7. Operational research findings are used to change policy or practices (ex, change guidelines or implementation approach)	**National APA 2**	**CTB APA 2**	**CTB APA 2 investment**	**Additional Information/Comments**
Yes or No as of September 30, 2016	N/A	yes	**Substantial**	2 OR results will be presented at the Union Conference in Liverpool in October 2016.
11.1.3. Number of health care workers	**CTB APA 2**		**CTB APA 2 investment**	**Additional Information/Comments**

trained, by gender and technical area			Substantial	
	# trained males APA 2	# trained females APA 2	Total # trained in APA 2	Total # planned trainees in APA 2
1. Enabling environment			0	
2. Comprehensive, high quality diagnostics	85	11	96	120
3. Patient-centered care and treatment	197	60	257	567
4. Targeted screening for active TB	0	0	0	0
5. Infection control	8	5	13	45
6. Management of latent TB infection	0	0	0	90
7. Political commitment and leadership	0	0	0	20
8. Comprehensive partnerships and informed community involvement	0	0	0	0
9. Drug and commodity management systems	0	0	0	0
10. Quality data, surveillance and M&E	0	0	0	15
11. Human resource development	1	0	1	2
Other (explain)				
Grand Total	**291**	**76**	**367**	**859**

11.1.5. % of USAID TB funding directed to local partners	National APA 2	CTB APA 2	CTB APA 2 investment	Additional Information/Comments
Percent as of September 30, 2016 (include numerator/denominator)		11% (280,000/2,452,800)	Substantial	

Year/Quarter	Number of pre-/XDR-TB cases started on BDQ nationwide	Number of pre-/XDR-TB cases started on DLM nationwide	CTB APA 2 investment	Additional Information/Comments
Total 2014	0	0	None	No PMDT to date
Total 2015	0	0		
Jan-Mar 2016	0	0		

Apr-Jun 2016	0	0		
Jul-Aug 2016	0	0		
To date in 2016	0	0		

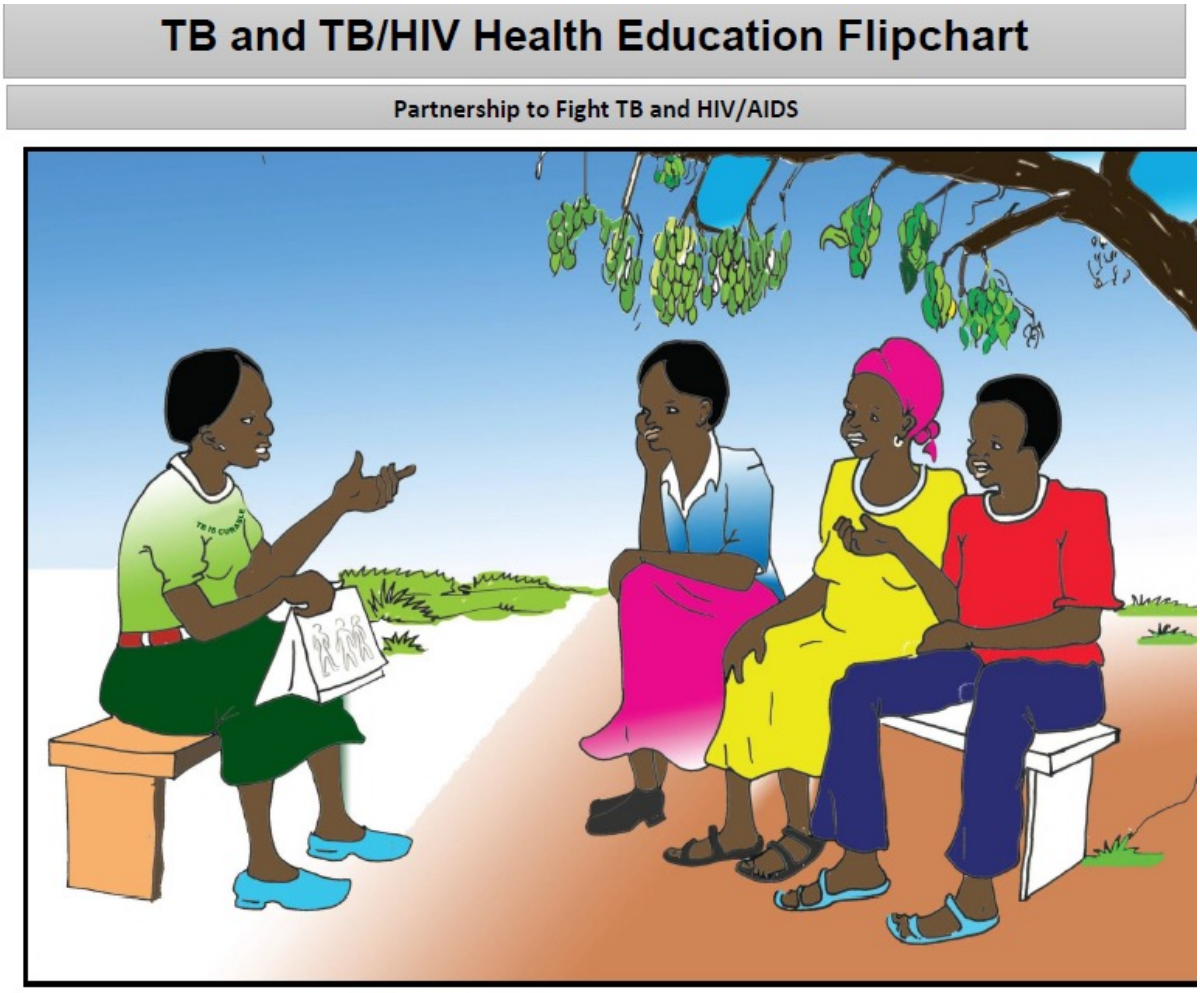
Number and percent of cases notified by setting (i.e. private sector, prisons, etc.) and/or population (i.e. gender, children, miners, urban slums, etc.) and/or case finding approach (CI/ACF/ICF) (3.1.1)							
		Reporting period					**CTB APA 2 investment**
		Oct-Dec 2015	Jan-Mar 2016	Apr-Jun 2016	Jul-Sept 2016	Cumulative Year 2	
Overall CTB geographic areas	TB cases (all forms) notified per CTB geographic area *(List each CTB area below - i.e. Province name)*						
	Central Equatoria State	1,138	1,063	1,011	1,018	4,230	
	Eastern Equatoria State	229	345	69	205	848	
	Western Equatoria State	71	85	44	66	266	
	TB cases (all forms) notified for all CTB areas	1,438	1,493	1,124	1,289	5,344	
	All TB cases (all forms) notified nationwide (denominator)	2,598	2,888	2,257	2,634	10,377	
	% of national cases notified in CTB geographic areas	55%	52%	50%	49%	52%	
Intervention (setting/population/approach)							
Contact investigations	CTB geographic focus for this intervention	Counties((Juba, Linya, Yei, Morobo, Mundri)				5	Substantial
	TB cases (all forms) notified from this intervention	21	98	59	5	183	
	All TB cases notified in this CTB area (denominator)	1,078	987	1,011	944	4,020	
	% of cases notified from this intervention	2%	9%	6%	1%	5%	
	CTB geographic focus for this intervention	Counties (Juba, Yei, Morobo, Mundri)				4	

Community referral	TB cases (all forms) notified from this intervention	62	30	20	48	160	
	All TB cases notified in this CTB area (denominator)	1,078	986	1,002	944	4,010	
	% of cases notified from this intervention	6%	3%	2%	5%	4%	

Annex II: Status of EMMP activities

Year 2 Mitigation Measures	Status of Mitigation Measures	Outstanding issues to address in Year 3	Additional Remarks
Improper handling, storage and disposal of waste generated in health facilities and laboratories using Xpert machines, sputum specimens and lab reagents. This may result in transmission of disease-causing pathogens through infectious waste if waste is not treated in a way that destroys pathogenic organisms. Some reagents can be harmful to the environment if improperly disposed.	On going TBIC measures introduced in Juba Teaching Hospital and planned to be rolled out in year 3	Plan to roll-out of TBIC to three TMUs in Juba city in year three Training material will align with either the *Environmental Guidelines for Small-Scale Activities in Africa* or the national regulations and procedures for medical waste. During supportive supervision visits, management and disposal of medical waste will be discussed and checked and necessary corrections will be made.	

Annex III: TB and TB/HIV Health Education Flip Charts



Is TB preventable?

Yes!

What can the community do to prevent and control TB?

- **Encourage anyone who has a cough for more than two weeks to get free diagnosis and treatment as early as possible.**
- **Support TB patients so they take medication regularly without interruption**
- **Don't spit randomly**
- **Cover your mouth with a piece of cloth or with your arm when coughing or sneezing.**
- **Open windows and doors to allow for free air movement .**
- **Open windows when travelling in public vehicles .**
- **Boil milk and milk products.**
- **Take your child for vaccination.**

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This brochure was made possible by the generous support of the United States Agency for International Development

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USAID FROM THE AMERICAN PEOPLE CHALLENGE TB

How to Protect Yourself and Your Family from TB

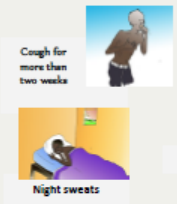
Let's Combat TB Together!

What is TB?

- TB is transmitted by microbes that are not seen by the naked eye. It is spread through air and unboiled milk.

What are the signs and symptoms of TB?

- Cough for more than two weeks
- Night sweats and mild fever
- Chest pain
- Loss of appetite
- Fatigue
- Loss of weight




Chest pain


Loss of weight

How is TB spread?

1. TB is primarily spread by coughing and sneezing.
   It is transmitted from untreated TB patient through the air that we breathe.
   - When a TB patient coughs or sneezes millions of TB germs are suspended in the air that we inhale.

A healthy person inhaling these germs will acquire the disease

2. TB is transmitted by drinking unboiled milk

TB is not transmitted by

1. Shaking of hands
2. Sharing food utensil
3. Sharing Clothes

Is TB curable?

- Yes , if it is diagnosed early and treated.
- The patient must follow the advice of the health professional.
- The patient must take medication without fail for six months at the nearest health facility or supervised by health supporters.
- Patients who do not take medication daily may be exposed to another form of TB that is more difficult to treat.

How is TB diagnosed?

- A person gives a sample of sputum (mucus that is coughed up) to a nearby laboratory
- The person needs to give three sputum specimens over two days in a row.
- Anyone with a cough that has lasted more than two weeks cough should visit the nearest health facility to be tested.

Where can we get TB treatment?

- TB diagnosis and treatment is available in all health facilities.

Is TB diagnosis and treatment expensive?

No. Both are free.

Is TB diagnosis and treatment difficult?

- Not at all! You will get free services in a nearby f health facility from trained professionals within minimal time.

What do TB patients need to do to prevent and control TB?

- TB patients should take their medication without missing any day for six months .


Taking medication every day.

- TB patients should cover their mouth and nose when coughing at any time.

- TB patients should spit in a closed container and either bury or burn the sputum to avoid spreading the disease to family members and the community.
- Boil milk before drinking it.
- Family members of TB patients should be tested for TB at

Annex IV: GeneXpert Algorithm

Republic of South Sudan
Ministry of Health
National TB, Leprosy and Buruli ulcer Control Program

Algorithm for utilization of the GeneXpert Technology for TB/ DR TB Diagnosis